

In the Claims

1. A method of making a carbon material comprising
providing a carbonaceous feedstock,
oxidizing said carbonaceous feedstock to remove a portion of
the volatiles therefrom and create a partially devolatilized precursor extract,
cooling said devolatilized precursor extract,
converting said devolatilized extract into a powder,
treating said powder with a solvent to dissolve at least a portion
of the hydrocarbon molecules contained therein,
separating said solvent and said dissolved hydrocarbons from
said powder,
introducing said powder into a sealed vessel,
coking said devolatilized carbonaceous extract powder, and
cooling said coked material.
2. The method of claim 1 including
effecting said oxidation at a temperature of about 100 to
500 °C.
3. The method of claim 2 including
effecting said oxidation on said powder having a mesh size of
about 60 to 200.
4. The method of claim 3 including
effecting said oxidation at a pressure of about 0.5 to 1.5
atmospheres.
5. The method of claim 1 including
effecting by said oxidation removal from said carbon feedstock
of volatile gases.
6. The method of claim 5 including
effecting by said oxidation reduction in hydrogen content of
said carbon feedstock.

7. The method of claim 1 including
effecting by said oxidation depletion of the transferable
hydrogen in said carbon feedstock to thereby decrease the fluidity thereof.
8. The method of claim 1 including
effecting said separation of solvent and dissolved hydrocarbons
by at least one method selected from the group consisting of filtration, centrifugation
and evaporation.
9. The method of claim 1 including
producing by said method a carbon material having a density of
at least 1.4 g/cm³.
10. The method of claim 1 including
selecting said carbonaceous feedstock from the group
consisting of petroleum pitch, petroleum tar, coal pitch, coal tar, gasification tar,
rubber, and combinations thereof.
11. The method of claim 1 including
selecting said carbonaceous feedstock from the group
consisting of recycled motor oil, biomass derivatives, shale oil and combinations
thereof.
12. The method of claim 1 including
selecting said solvent from the group consisting of acetone,
quinoline, toluene, alcohol, xylene, methylethylketone, carbon tetrachloride,
trichloroethylene and combinations thereof.
13. The method of claim 1 including
selecting as said solvent an organic solvent.
14. The method of claim 1 including
wherein said solvent is an ionic liquid.
15. The method of claim 1 including
effecting said coking in an inert gas environment.

16. The method of claim 1 including creating said powder with a size of about 10 to 325 mesh, and effecting said partial devolatilization under an inert gas environment.
17. The method of claim 1 including effecting said foaming under an inert gas environment.
18. The method of claim 1 including effecting said foaming at a pressure of about 0.5 to 1.5 atmospheres.
19. The method of claim 18 including effecting said coking at a temperature of about 330° to 600°C for about 1 minute to 6 hours.
20. The method of claim 19 including effecting said heating to devolatilize said carbon foam precursor to a temperature of about 100° to 720°C.
21. The method of claim 19 including creating said devolatilized carbon foam precursor powder with a size of about 10 to 325 mesh.
22. The method of claim 1 including effecting by said partial devolatilization of said carbon foam precursor by alteration of the fluid nature of the matrix of said heated carbonaceous feedstock.
23. The method of claim 1 including employing bituminous coal as said carbonaceous feedstock.
24. The method of claim 1 including employing coal extract as said carbonaceous feedstock.
25. The method of claim 24 including employing a material selected from the group consisting of de-ashed coal extract and un-ashed coal extract as said carbonaceous feedstock.

26. The method of claim 1 including employing mesophase pitch as said carbonaceous feedstock.
27. The method of claim 1 including employing petroleum based pitch as said carbonaceous feedstock.
28. The method of claim 1 including after said partial devolatilization, but before said coking, storing said devolatilized powder.
29. The method of claim 2 including employing stagnant inert gas as said inert gas environment.
30. The method of claim 2 including employing flowing inert gas as said inert gas environment.
31. The method of claim 17 including employing stagnant inert gas as said inert gas environment.
32. The method of claim 17 including employing flowing inert gas as said inert gas environment.
33. A method of making a carbon foam material comprising providing a carbonaceous feedstock, creating a powder of said carbonaceous feedstock, heating said powdered carbonaceous feedstock at a pressure of about 0.5 to 1.5 atmospheres at a temperature of about 100 to 500 °C, treating said powder with a solvent to dissolve at least a portion of the hydrocarbon molecules contained therein, heating said oxidized carbonaceous feedstock in an inert gas environment to a temperature of about 330 °C to 600 °C to coke said powdered precursor, and cooling said foam to room temperatures.
34. The method of claim 33 including effecting said coking in an inert gas environment.
35. The method of claim 33 including employing bituminous coal as said carbon foam precursor.

36. The method of claim 33 including
employing coal extract as said carbon foam precursor.
37. The method of claim 33 including
employing a material selected from the group consisting of de-
ashed coal extract and un-ashed coal extract as said carbon foam precursor.
38. The method of claim 33 including
employing hydrogenated coal extract as said carbonaceous
feedstock.
39. The method of claim 33 including
employing hydrogenated coal extract as said carbonaceous
feedstock.
40. The method of claim 33 including
employing mesophase pitch as said carbon foam precursor.
41. The method of claim 33 including
employing petroleum based pitch as said carbon foam
precursor.
42. The method of claim 33 including
effecting said carbonaceous feedstock oxidation in the presence
of at least one material selected from the group consisting of water and steam.
43. The method of claim 33 including
devolatilizing said feedstock prior to said oxidation.
44. The method of claim 33 including
creating said precursor powder in the range of about 10 to 325
mesh.
45. The method of claim 33 including
after said oxidation, but prior to said foaming, storing said
oxidized precursor.
46. The method of claim 33 including
effecting said coking at a pressure of about 0.5 to 1.5
atmospheres

47. The method of claim 33 including
after said coking calcining said material.